

CS4471 Lab Assignment 5

VLAN & Inter-Vlan Routing (version 1.0)

Group Number: 18

Group Members:

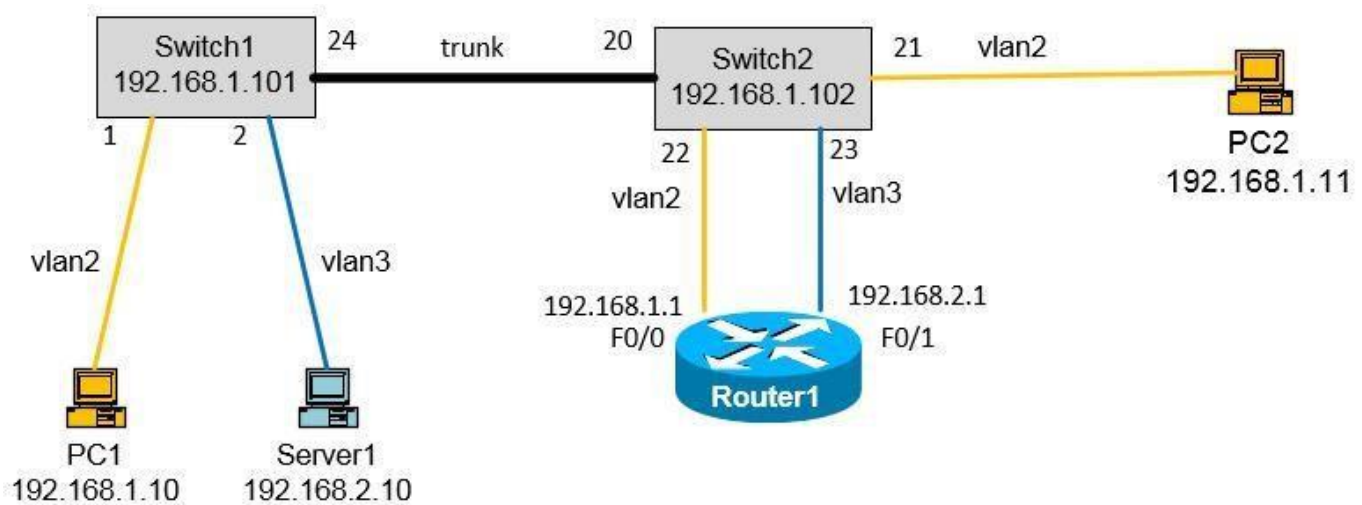
SmitKumar Patel CIN : 306587208

Riddhiben Patel CIN : 306612701

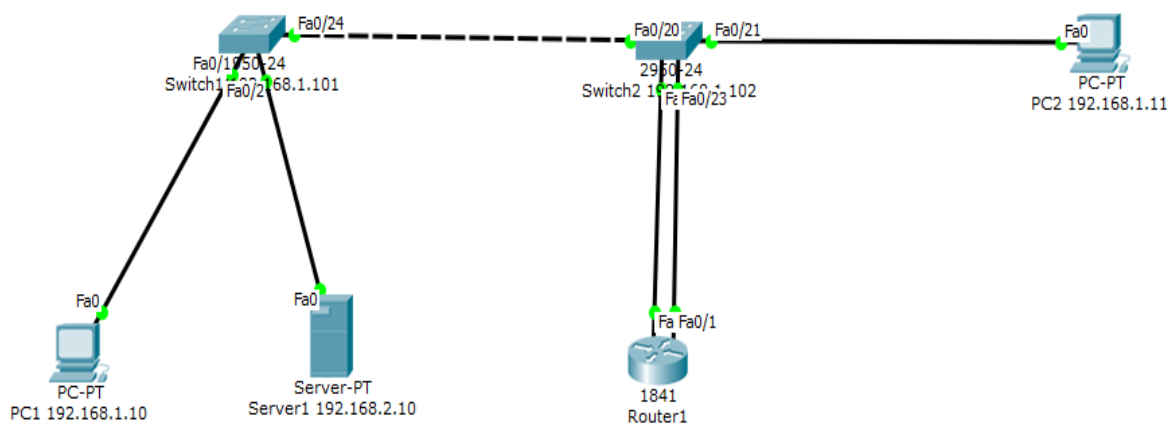
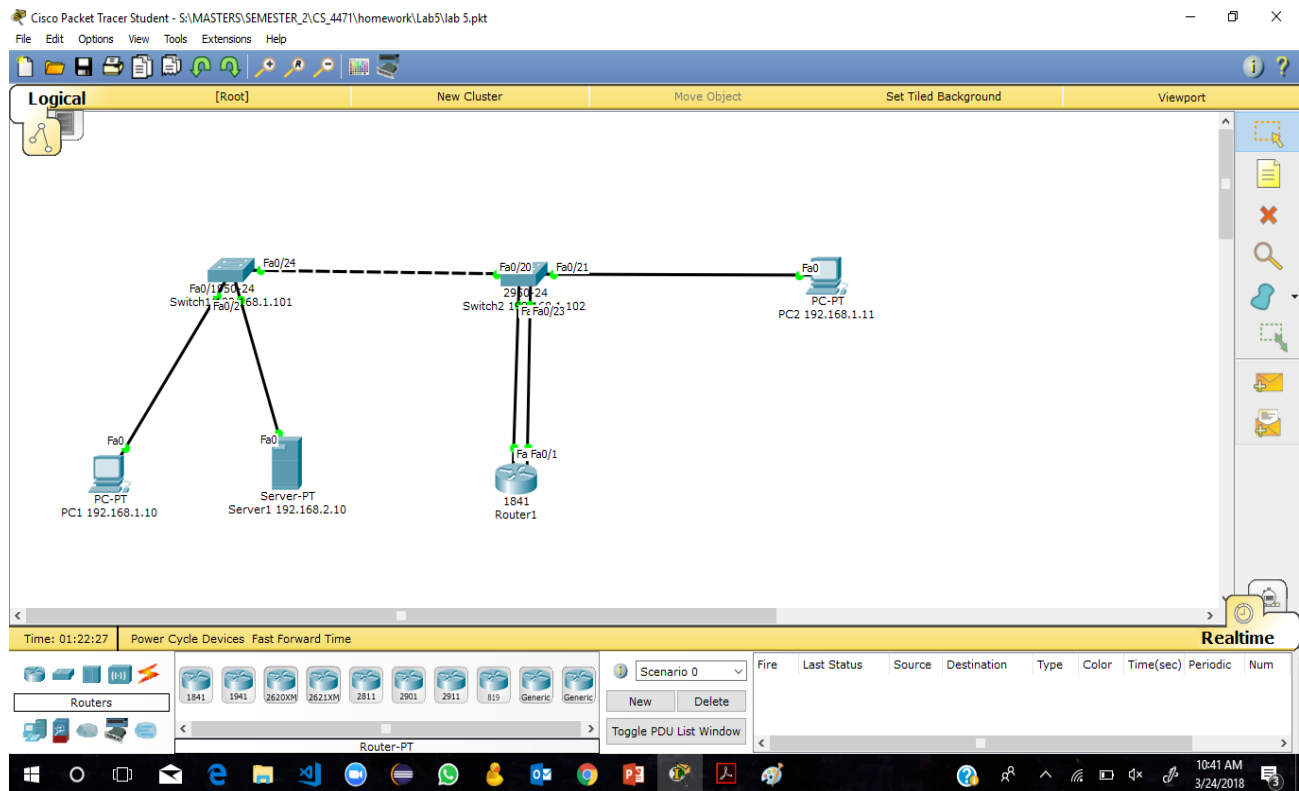
Alejandra Monteon CIN : 302203894

Use Cisco Packet Tracer program to create the network shown below.

- configure the hostnames, IP address, and subnet mask(255.255.255.0) of all six devices as shown.
- interconnect the six devices with appropriate Ethernet cables and verify that all six links are up

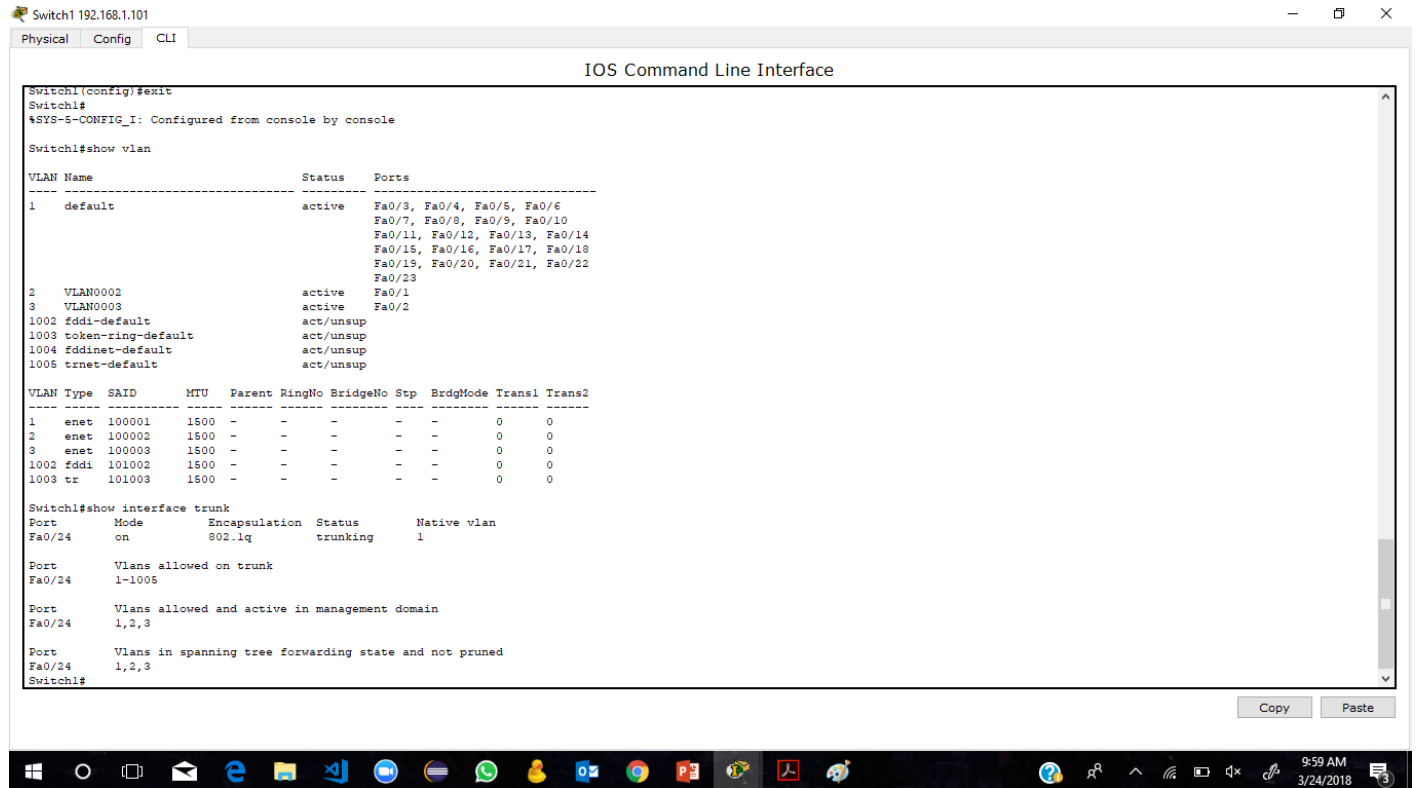


1. (20 pts) Submit screenshot of Cisco Packet Tracer network diagram created. Make sure that the port labels are shown (Options->Preferences->Show Port Labels)



2. (20 pts) On the two Ethernet switches, configure the switch ports to be access ports or trunk port. Access ports needs to be configured to be in vlan2 or vlan3 as shown in diagram.

a. Submit output of commands “show vlan” and “show interface trunk” from the CLI of Switch1.



```
Switch1(config)#exit
Switch1#
%SYS-5-CONFIG_I: Configured from console by console

Switch1#show vlan

VLAN Name                Status    Ports
-----
1    default                active    Fa0/3, Fa0/4, Fa0/5, Fa0/6
                                           Fa0/7, Fa0/8, Fa0/9, Fa0/10
                                           Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                           Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                           Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                           Fa0/23
2    VLAN0002              active    Fa0/1
3    VLAN0003              active    Fa0/2
1002 fddi-default          act/unsup
1003 token-ring-default    act/unsup
1004 fddinet-default       act/unsup
1005 trnet-default         act/unsup

VLAN Type  SAID      MTU    Parent RingNo BridgeNo Stp  BrgdMode Trans1 Trans2
-----
1    enet     100001    1500    -      -      -      -      -      0      0
2    enet     100002    1500    -      -      -      -      -      0      0
3    enet     100003    1500    -      -      -      -      -      0      0
1002 fddi     101002    1500    -      -      -      -      -      0      0
1003 tr      101003    1500    -      -      -      -      -      0      0

Switch1#show interface trunk
Port      Mode      Encapsulation  Status        Native vlan
Fa0/24    on        802.1q         trunking      1

Port      Vlans allowed on trunk
Fa0/24    1-1005

Port      Vlans allowed and active in management domain
Fa0/24    1,2,3

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/24    1,2,3
Switch1#
```

```
Switch1#show vlan
```

VLAN Name	Status	Ports
1 default	active	Fa0/3, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20, Fa0/21, Fa0/22 Fa0/23
2 VLAN0002	active	Fa0/1
3 VLAN0003	active	Fa0/2
1002 fddi-default	act/unsup	
1003 token-ring-default	act/unsup	
1004 fddinet-default	act/unsup	
1005 trnet-default	act/unsup	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
2	enet	100002	1500	-	-	-	-	-	0	0
3	enet	100003	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0

```

Switch1#show interface trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa0/24    on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa0/24    1-1005

Port      Vlans allowed and active in management domain
Fa0/24    1,2,3

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/24    1,2,3
Switch1#

```

b. Submit output of commands “show vlan” and “show interface trunk” from the CLI of Switch2

Switch2 192.168.1.102

Physical Config CLI

IOS Command Line Interface

```

Switch2(config)#exit
Switch2#
%SYS-5-CONFIG_I: Configured from console by console

Switch2#show vlan

VLAN Name                Status    Ports
-----
1  default                 active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                   Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                   Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                   Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                   Fa0/17, Fa0/18, Fa0/19, Fa0/24
2  VLAN0002                active    Fa0/21, Fa0/22
3  VLAN0003                active    Fa0/23
1002 fddi-default          act/unsup
1003 token-ring-default    act/unsup
1004 fddinet-default        act/unsup
1005 trnet-default          act/unsup

VLAN Type  SAID      MTU    Parent RingNo BridgeNo Stp    BrgdMode Trans1 Trans2
-----
1  enet     100001    1500    -      -      -      -      -      0      0
2  enet     100002    1500    -      -      -      -      -      0      0
3  enet     100003    1500    -      -      -      -      -      0      0
1002 fddi    101002    1500    -      -      -      -      -      0      0
1003 tr     101003    1500    -      -      -      -      -      0      0

Switch2#
Switch2#show interface trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa0/20    on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa0/20    1-1005

Port      Vlans allowed and active in management domain
Fa0/20    1,2,3

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/20    1,2,3
Switch2#

```

Copy Paste

Windows taskbar: 10:18 AM 3/24/2018

Switch2#show vlan

VLAN	Name	Status	Ports
1	default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/24
2	VLAN0002	active	Fa0/21, Fa0/22
3	VLAN0003	active	Fa0/23
1002	fddi-default	act/unsup	
1003	token-ring-default	act/unsup	
1004	fddinet-default	act/unsup	
1005	trnet-default	act/unsup	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
2	enet	100002	1500	-	-	-	-	-	0	0
3	enet	100003	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0

Switch2#

Switch2#show interface trunk

Port	Mode	Encapsulation	Status	Native vlan
Fa0/20	on	802.1q	trunking	1

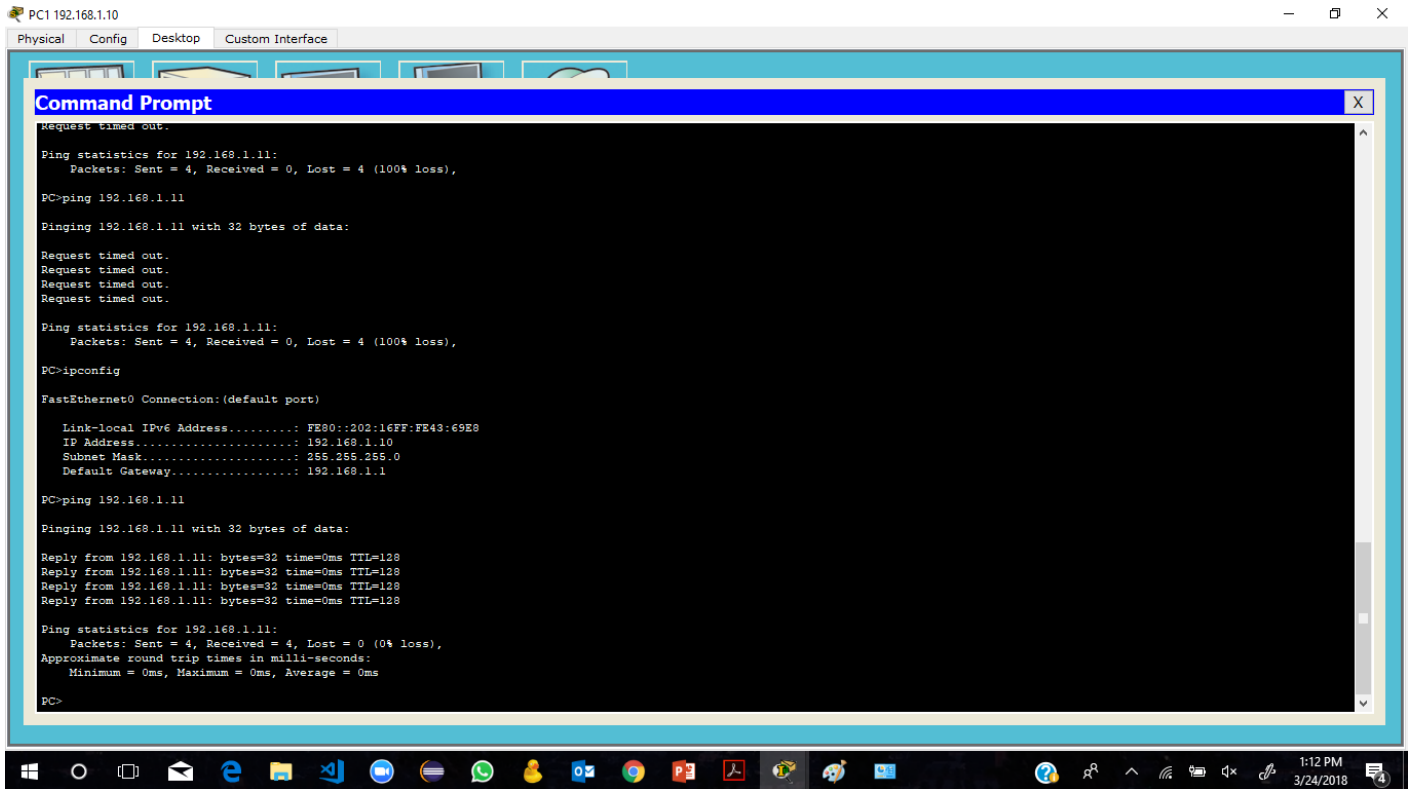
Port	Vlans allowed on trunk
Fa0/20	1-1005

Port	Vlans allowed and active in management domain
Fa0/20	1,2,3

Port	Vlans in spanning tree forwarding state and not pruned
Fa0/20	1,2,3

Switch2#

3a. (10 pt) From command prompt window of PC1, verify that you can ping IP address of PC2. Submit screenshot of this output.



```
PC>ipconfig

FastEthernet0 Connection:(default port)

    Link-local IPv6 Address . . . . . : FE80::202:16FF:FE43:69E8
    IP Address. . . . . : 192.168.1.10
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1

PC>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time=0ms TTL=128
Reply from 192.168.1.11: bytes=32 time=0ms TTL=128
Reply from 192.168.1.11: bytes=32 time=0ms TTL=128
Reply from 192.168.1.11: bytes=32 time=0ms TTL=128

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

3b. (10 pt) Configure the two ports on Router1 to have IP addresses shown in diagram. From CLI of Router1, verify that you can ping IP address of PC1 and PC2. Submit screenshot showing that from command prompt window of PC1, you can ping IP address 192.168.2.1.



The screenshot shows the Router1 CLI interface with the following text:

```
Router1 con0 is now available

Press RETURN to get started.

Router1>enable
Router1#ip 192.168.1.10
      ^
% Invalid input detected at '^' marker.

Router1#ping 192.168.1.10

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.10, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/0 ms

Router1#ping 192.168.1.11

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.11, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/1 ms

Router1#
```

The interface includes tabs for Physical, Config, and CLI, and a title bar for the IOS Command Line Interface. A Windows taskbar is visible at the bottom of the window.

```
Router1#ping 192.168.1.10

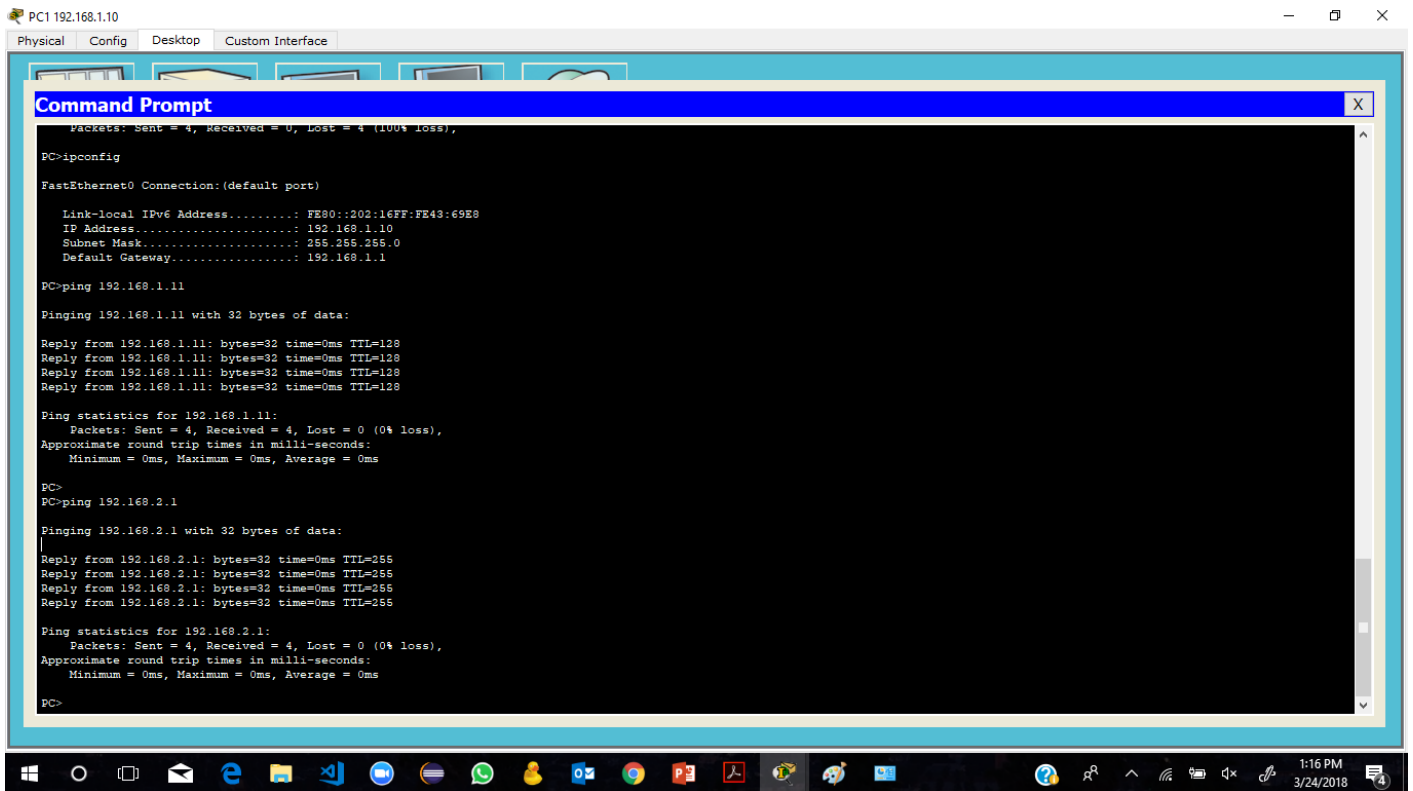
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.10, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/0 ms

Router1#ping 192.168.1.11

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.11, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/1 ms

Router1#
```


Submit screenshot showing that from command prompt window of PC1, you can ping IP address 192.168.2.1.



The screenshot shows a Windows-style desktop environment with a taskbar at the bottom. The active window is titled "PC1 192.168.1.10" and has tabs for "Physical", "Config", "Desktop", and "Custom Interface". The "Config" tab is selected, displaying a "Command Prompt" window. The command prompt shows the output of the "ipconfig" command, indicating the IP address is 192.168.1.10 and the default gateway is 192.168.1.1. It then shows the results of a "ping 192.168.1.11" command, which was successful with 0% loss. Finally, it shows the results of a "ping 192.168.2.1" command, which was also successful with 0% loss. The taskbar at the bottom includes icons for various applications and the system clock showing 1:16 PM on 3/24/2018.

```
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>ipconfig

FastEthernet0 Connection: (default port)

    Link-local IPv6 Address . . . . . : FE80::202:16FF:FE43:69E8
    IP Address. . . . . : 192.168.1.10
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1

PC>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time=0ms TTL=128
Reply from 192.168.1.11: bytes=32 time=0ms TTL=128
Reply from 192.168.1.11: bytes=32 time=0ms TTL=128
Reply from 192.168.1.11: bytes=32 time=0ms TTL=128

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>
PC>ping 192.168.2.1

Pinging 192.168.2.1 with 32 bytes of data:

Reply from 192.168.2.1: bytes=32 time=0ms TTL=255
Reply from 192.168.2.1: bytes=32 time=0ms TTL=255
Reply from 192.168.2.1: bytes=32 time=0ms TTL=255
Reply from 192.168.2.1: bytes=32 time=0ms TTL=255

Ping statistics for 192.168.2.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>
```

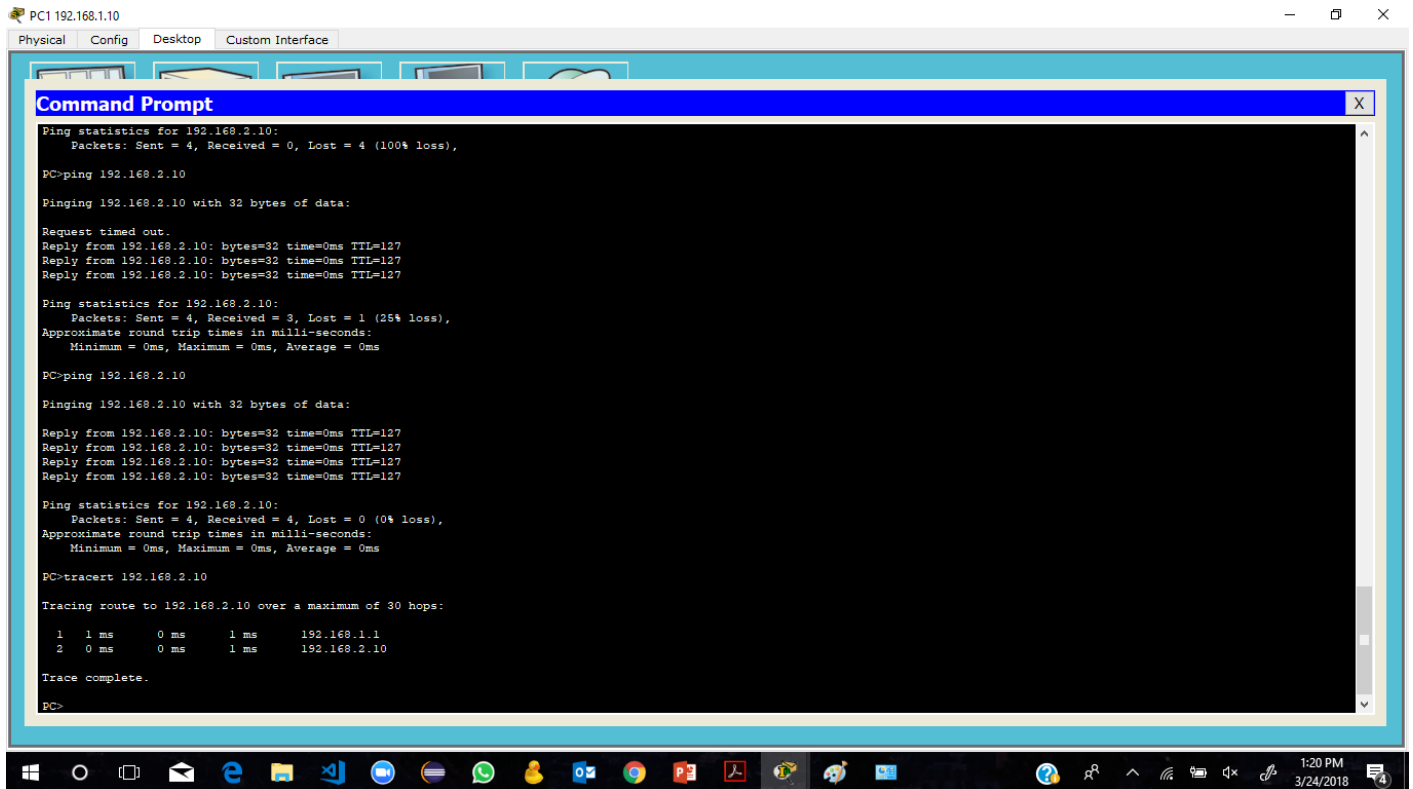
```
PC>ping 192.168.2.1

Pinging 192.168.2.1 with 32 bytes of data:

Reply from 192.168.2.1: bytes=32 time=0ms TTL=255
Reply from 192.168.2.1: bytes=32 time=0ms TTL=255
Reply from 192.168.2.1: bytes=32 time=0ms TTL=255
Reply from 192.168.2.1: bytes=32 time=0ms TTL=255

Ping statistics for 192.168.2.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

4. (10 pt) Submit screenshot showing that from command prompt window of PC1, you can ping and tracert to IP address of Server1.



The screenshot shows a Packet Tracer interface for PC1 with IP 192.168.1.10. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The window contains the following text:

```
Ping statistics for 192.168.2.10:
  Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>ping 192.168.2.10

Pinging 192.168.2.10 with 32 bytes of data:

Request timed out.
Reply from 192.168.2.10: bytes=32 time=0ms TTL=127
Reply from 192.168.2.10: bytes=32 time=0ms TTL=127
Reply from 192.168.2.10: bytes=32 time=0ms TTL=127

Ping statistics for 192.168.2.10:
  Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>ping 192.168.2.10

Pinging 192.168.2.10 with 32 bytes of data:

Reply from 192.168.2.10: bytes=32 time=0ms TTL=127
Reply from 192.168.2.10: bytes=32 time=0ms TTL=127
Reply from 192.168.2.10: bytes=32 time=0ms TTL=127
Reply from 192.168.2.10: bytes=32 time=0ms TTL=127

Ping statistics for 192.168.2.10:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>tracert 192.168.2.10

Tracing route to 192.168.2.10 over a maximum of 30 hops:

  0  1 ms    0 ms    1 ms    192.168.1.1
  1  0 ms    0 ms    1 ms    192.168.2.10

Trace complete.

PC>
```

```
PC>ping 192.168.2.10

Pinging 192.168.2.10 with 32 bytes of data:

Reply from 192.168.2.10: bytes=32 time=0ms TTL=127
Reply from 192.168.2.10: bytes=32 time=0ms TTL=127
Reply from 192.168.2.10: bytes=32 time=0ms TTL=127
Reply from 192.168.2.10: bytes=32 time=0ms TTL=127

Ping statistics for 192.168.2.10:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>tracert 192.168.2.10

Tracing route to 192.168.2.10 over a maximum of 30 hops:

  0  1 ms    0 ms    1 ms    192.168.1.1
  1  0 ms    0 ms    1 ms    192.168.2.10

Trace complete.
```

5. (30 pts) submit printout of output of “show running-config” from CLI of each switch and router.

Switch1

```
Switch1>enable
Switch1#show running-config
Building configuration...

Current configuration : 1218 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch1
!
!
!
spanning-tree mode pvst
!
interface FastEthernet0/1
 switchport access vlan 2
 switchport mode access
!
interface FastEthernet0/2
 switchport access vlan 3
 switchport mode access
!
interface FastEthernet0/3
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
```

```

-
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
switchport access vlan 2
switchport mode trunk
!
interface Vlan1
no ip address
shutdown
!
interface Vlan2
ip address 192.168.1.101 255.255.255.0
!
interface Vlan3
no ip address
!
!

```

```

!
interface FastEthernet0/24
switchport access vlan 2
switchport mode trunk
!
interface Vlan1
no ip address
shutdown
!
interface Vlan2
ip address 192.168.1.101 255.255.255.0
!
interface Vlan3
no ip address
!
!
!
!
line con 0
!
line vty 0 4
login
line vty 5 15
login
!
!
end

```

Switch 2

```
Switch2>enable
Switch2#show running-config
Building configuration...

Current configuration : 1184 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch2
!
!
!
spanning-tree mode pvst
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
switchport mode trunk
!
interface FastEthernet0/21
switchport access vlan 2
switchport mode access
!
interface FastEthernet0/22
switchport access vlan 2
switchport mode access
!
interface FastEthernet0/23
switchport access vlan 3
switchport mode access
!
interface FastEthernet0/24
!
interface Vlan1
no ip address
shutdown
!
interface Vlan3
no ip address
!
```

```
interface FastEthernet0/24
!
interface Vlan1
no ip address
shutdown
!
interface Vlan3
no ip address
!
!
!
!
line con 0
!
line vty 0 4
login
line vty 5 15
login
!
!
end
```

Router:[illegible]

```
!  
!  
!  
interface FastEthernet0/0  
  ip address 192.168.1.1 255.255.255.0  
  duplex auto  
  speed auto  
!  
interface FastEthernet0/1  
  ip address 192.168.2.1 255.255.255.0  
  duplex auto  
  speed auto  
!  
interface Vlan1  
  no ip address  
  shutdown  
!  
ip classless  
!  
ip flow-export version 9  
!  
!  
!  
!  
!  
!  
line con 0  
!  
line aux 0  
!  
line vty 0 4  
  login  
!  
!  
!  
end
```